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Scheduler for cooling and ventilation plants: feedback on easy and low cost method for energy savings

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In industrial engineering, scheduling is a well-established strategy for optimizing resource use and minimizing operational costs. At CERN's Engineering department, the Cooling and Ventilation group has implemented an automatic scheduling solution to reduce electricity consumption by selectively shutting down plants during nights and weekends, when their operation is not required. Given that CV systems account for a significant share of CERN's total electricity use, even simple scheduling strategies can yield substantial energy savings - up to 75% in some cases. This paper presents the motivation, methodology, and preliminary results of scheduler deployments across multiple CV plants between 2023 and 2025, including recent pilots at Point 5 of the Large Hadron Collider (LHC). Two types of scheduler conditions were implemented: calendar-based (e.g., operating only during working hours) and temperature-based (e.g., starting only when zone temperature thresholds are exceeded). Operational safety was carefully assessed - a CO_2 measurement campaign was conducted at Point 5 to confirm compliance with environmental and safety requirements. Preliminary results from several sites show significant reduction in consumption without compromising performance. This low-cost approach demonstrates how simple digital solutions can lead to impactful energy savings in large-scale technical infrastructures.

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Footnotes

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